

*TAKING PRAGMATISM SERIOUSLY: A REVIEW OF WILLIAM BAUM'S UNDERSTANDING
BEHAVIORISM: BEHAVIOR, CULTURE, AND EVOLUTION (SECOND EDITION)*

HOWARD RACHLIN

STONY BROOK UNIVERSITY, STONY BROOK, NY, USA

AND

MARVIN FRANKEL

SARAH LAWRENCE COLLEGE, BRONXVILLE, NY, USA

This important book has two main purposes. The first is to present, in a non-technical way, accessible to intelligent laypeople, a scientific, behavioral approach to all aspects of human activity including choice, rule-governed behavior, self control, religious belief, linguistic interaction, ethics, and culture. Its scope equals that of Skinner's nontechnical writings, but Baum's approach is more molar and more pragmatic than Skinner's. The book's second purpose is to embed behavioral science firmly in the context of Darwinian evolution. Baum is generally successful, we believe, in both of these ambitious purposes.

Key words: behavioral evolution, biological evolution, behaviorism, Darwin, group selection, molar behaviorism, pragmatism, social evolution

Contemporary philosophers generally reject explanations of mind in terms of overt behavior on the grounds that mental events may occur in the absence of overt behavior. For example, the neuroscientist M.R. Bennett and the philosopher P.M.S. Hacker (2003), in a highly influential book on the relation between neuroscience and the mind, say (p. 82, fn), "It is not only possible but common for people to be in (mild) pain, thinking, or intending something, and not exhibit the fact that they are....We are not defending a form of behaviorism..." Yet they also argue, consistently with behaviorism, that the brain is not the organ of thought. They correctly say (p. 180), "...it is I who think, not my brain." Their error lies in their conception of both thought and behavior as momentary events. If they had said: "It is common for people to be in (mild) pain, thinking, or intending something, and not *at the present moment* exhibit the fact that they are," they would be absolutely correct. But without the italicized qualification, their argument is false.

How then can mental activity be explained in terms of overt behavior even though a person engaged in mental activity does not show it at the present moment? That is the central question that Baum sets out to address in this book. The answer lies in a molar and behavioral conception of what it means to be presently doing something. Let us consider what such a conception entails.

If a locomotive is traveling at a constant speed of 0.5 miles per minute, the distance the locomotive travels (in miles) divided by the time it takes to go that distance (in minutes) will always be 0.5 regardless of how small a time interval or how small a distance you observe. Differential calculus is essentially based on that fact. But now suppose a group of schoolchildren is visiting the barn where locomotives are kept. Two locomotives are sitting there, not moving at all. The engineer showing the children around points to one of them and says, "This locomotive is going 100,000 miles per year at present." Then he points to the other and says, "This one is a little older and we use it less; it's only going 50,000 miles per year at present." One child, not the brightest, pipes up, "How can you say that one locomotive is going at twice the rate of the other at present if they're both standing still?" The engineer patiently responds, "'At present' can refer to any time even one much longer than a moment. The locomotives don't

This review was prepared with the assistance of a grant from the National Institutes of Health.

Correspondence concerning this review should be sent to Howard Rachlin: Psychology Department, Stony Brook University, Stony Brook, NY 11794 (e-mail: howard.rachlin@sunysb.edu) or Marvin Frankel (e-mail: mfrankel@slc.edu).

doi: 10.1901/jeab.2009.92-131

go at a constant speed all year. Sometimes they go slow, sometimes fast, and sometimes they stand still like now. The locomotives may do one thing at the present second (both stand still) but do another thing over the present year (one go at twice the rate of the other). This is just a way we have of talking about the behavior of locomotives." No problem. The English language is flexible enough to mean two different things by the phrase, "at present," and it's a good thing that it can. This year overlaps this second; a locomotive may do one thing this second and a completely opposite thing this year. Yet both the second and the year are referred to as the present. Only a child might fail to understand this convention. Regardless of whether we're talking about the present second or the present year, we're referring to what the locomotives are actually doing—their *overt* behavior. Even that not-too-bright child understands that at this moment, while both locomotives are sitting in the barn, there need be no internal state within them, spiritual or physical, wherein their yearly mileage is represented. We use the same phrase, "at present," to refer to events occurring over different time periods because "present" is a relative term defined by its context. Otherwise we would need different terms for events occurring over the present second, hour, week, century, etc.

When we say that a locomotive is being driven 100,000 miles this year we conveniently ignore the particular distribution of those miles over the year. There are an infinite number of ways they could be distributed. The railroad's accountants may be intensely interested in how many miles the locomotive was driven but completely uninterested in their distribution over the year. The child, if he were stubborn, might yet argue that the locomotives are *really* standing still whereas their differing rates over the year are "just" an abstraction. But a locomotive's rate of 100,000 miles this year is no less real than its rate of 0 miles this second. It may be more real, in a sense, because it is more significant to the railroad than the rate this second. If we take pragmatism seriously, the reality of any description of behavior depends not on how particular it is but on how useful it is—and that depends on its context.

Moreover, taking pragmatism very *very* seriously, reality itself—what is real and what is not

real—depends on similar considerations. Is it useful to say that some things really exist and that other things do not really exist but only appear to exist? Is it useful to say that some events really happened while some events did not really happen but only appeared to happen? It certainly seems so; it is hard to imagine how language could function in this world (in everyday life as well as in science) without such a distinction. Then, on that basis, and on that basis only, we can argue about what is real and what is not real. Then it would be clear that the identical (zero) rates of the two locomotives this second is no more real than the difference in their rates this year. That is, the particular is essentially no more real than the abstract; the brief event is essentially no more real than the temporally extended event; the molecular is no more real than the molar; the atom is no more real than the chair. We have introduced this review with the behavior of locomotives so that, except for those who might take *The Little Engine That Could* to be nonfiction, psychological or mental states would not interfere with the argument. Now let us turn to the behavior of organisms.

Two rats are currently pressing levers in two Skinner boxes. One is pressing the lever at a rate of 10 responses per minute and the other is pressing the lever at a rate of 20 responses per minute. Yet neither rat is pressing the lever at this very second. One is sniffing around in the corner of the cage while the other is grooming itself. In one sense both rats are doing different things—pressing at different rates; in another sense they are both doing the same thing—not pressing the lever this second; in still another sense they are doing different things—sniffing versus grooming. Are they really doing the same thing or different things? Again taking pragmatism seriously, it depends on what use you are going to make of the information. Skinner's concept of the operant implies that even if the rats were both pressing the lever at this very second they might be pressing it in different ways; one might be pressing with its left paw, the other with its right paw or nose or tail. How important are such differences? For Skinner they were not important because it is more useful, in terms of behavioral prediction and control, to focus on the common operant than on the different muscular movements. (On the other hand, if you were a physiologist interested

in motor control such distinctions might be crucial.) The difference between Skinner and earlier behaviorists was his focus on the operant and its environmental consequences (the contingencies of reinforcement) as opposed to the earlier behaviorists' more molecular focus on muscular movements and connections within the organism. The operant is an abstract and molar concept whose particulars are individual muscular movements but, as argued above, an operant is no less real for that.

It is important to note, however, that Skinner's molarism was strictly limited. For Skinner, response rates over a period as long as an hour's session could not serve as raw data; they would have to be explained in terms of contingencies of reinforcement of discrete operants (or possibly in terms of reinforcement of interresponse times). To just present a response rate as it might vary from session to session would, Skinner thought, obscure the immediate changes in rate that a cumulative recorder might reveal. Still less would Skinner acknowledge that relative rate of response could be fundamental. For him, as for many Skinnerians today, relative rates over a session would be explicable only in terms of contingencies of reinforcement of individual change-over responses.

As all readers of this journal know, in a series of books starting with *Walden Two* (1948), running through *Science and Human Behavior* (1953), *Verbal Behavior* (1957), *Beyond Freedom And Dignity* (1971), and *About Behaviorism* (1974), Skinner extended the concept of the operant and its control by reinforcement contingencies to embrace all of human behavior ranging from individual acts, through verbal interchange, to the structure of cultural institutions. The behavior that Skinner explained (in terms of prediction and control) in these books might be highly complex but in principle all of it was interpretable in terms of individual operants and their reinforcement and punishment. The first of the two main themes in Baum's *Understanding Behaviorism: Behavior, Culture, And Evolution* goes over the ground Skinner covered in his books on human nature and society but from a more molar viewpoint. [Disclosure: The book fairly and sympathetically presents the views of one of us (HR) along with Baum's own views. Baum stresses commonalities rather than differences, as we do in this review.] "So,"

the reader may ask, "What have locomotives and rats in Skinner boxes to do with human nature?" Let us then consider a human case. Two men, dressed similarly, are sitting alongside each other on a commuter train (pulled by one of the locomotives) heading to New York City; both are silently reading newspapers. That is, they are doing the same thing at the present moment. But one is going to see his dentist while the other is going to work in the city. As with the locomotives and the rats, the men are doing the same thing at the present moment, interpreted narrowly, and doing different things at the present moment interpreted widely. What they are really doing depends on who wants to know. If it is the conductor of the train then they are really doing the same thing. If it is their wives then they are really doing different things.

Another human case, from the neuroscientist Jeffrey Grey (as quoted by John Staddon, 2001, p. 177): "What...is the difference between two awake individuals, one of them stone deaf, who are both sitting immobile in a room in which a record player is playing a Mozart string quartet?" The obvious answer is tautological: one is hearing the quartet and the other is not. But what does it mean to hear something? For Gray and many philosophers, even some modern ones (although not for Bennett and Hacker), it means that something nonphysical is going on in their heads—the hearing person is having a "quale" or a "train of sensations" or a "raw feel" and the deaf person is not. Over and over again Baum questions the pragmatic value of such answers—which he labels *mentalistic*. What difference would it make if blue objects caused you and everyone else to have blue quales but those same blue objects caused me to have red quales? I would just learn to call all my red quales blue and we would all get along in perfect agreement. In such cases it is our ability to communicate about colored objects—our overt discriminative behavior over time—that counts.

A second interpretation of the difference between the hearing and deaf individuals is that the essential difference resides in their brain activity; the hearing person has activity in the auditory paths of her brain while the deaf person does not and that is the bottom line of the difference between them. Like the physiological difference between the two rats in our

example above, the reality of this distinction depends on how you intend to use it. If you were a physiologist or an audiologist interested in treating the deaf person's deafness or understanding the mechanism underlying the hearing person's hearing then the physiological difference would indeed be crucial for you. But then you should be looking not at two people sitting in a room where a record is playing but at the results of an audiometer test—that is, you should be looking at measurable discriminatory behavior over time. Even a physiologist might want to make a distinction between hearing (*really* hearing) and the physiological mechanism in the brain underlying hearing. Otherwise she might have to pick and choose among the various components of the physiological mechanism to decide which of them contains the essence of the person's hearing. It would be like trying to decide which of the various components of a car contains the essence of its acceleration.

If a physiologist must define hearing and deafness in behavioral terms, still more must a psychologist do so. For the psychologist the difference between a hearing person and a deaf person lies in their discriminatory behavior over time. The two people in the room with the quartet playing are, like the two locomotives, the two rats, and the two train riders, both doing the same thing in the short run but doing different things in the long run. Gray's postulation that one can hear and the other is stone deaf means that for one person sounds are discriminative stimuli while for the other they are not. The identity of their behavior at the present moment means no more than the identity of the behavior of the two locomotives, the two rats, the two train riders, at the present moment—or the identity of the behavior of Picasso and a kindergarten child both, at the present moment, painting a yellow line in the upper right corner of a piece of paper. In all cases the crucial distinction lies in behavior in the long run, behavior considered in molar terms, behavior as real as a punch in the nose.

This distinction between behavior over a short period and behavior over a long period underlies Baum's approach to complex human behavior such as human purpose, knowledge, language, consciousness, and thought as well as social issues such as freedom, cooperation, responsibility, government, religion, and culture in general. Pragmatic consider-

ations dominate throughout. According to Baum (p. 33), "If...it is useful to say that a person is running a race in order to qualify for the Olympics, then running a race in order to qualify for the Olympics constitutes a behavioral event." And (p. xi) "...all behaviorists agree that a science of behavior is possible." In order to treat a pattern of behavior over time as a real event, and to deal with it as a scientific datum, it is not necessary to postulate a spiritual event, a neurophysiological event, or a cognitive event whose only property is to internally represent the behavioral pattern at every moment during its performance. To do so is like saying that a locomotive that travels 100,000 miles per year, going fast sometimes, slow at others, standing still at others, has somewhere inside it a representation of itself running at a constant speed of 100,000 miles per year. Such supposedly more real internal representations (spiritual, physiological, cognitive) have no function in a science of behavior. It is these internal representations, not the molar patterns they supposedly represent, that are, if you take pragmatism seriously, made up and not real.¹

In taking this molar view Baum avoids one of the classical criticisms of pragmatism: that it is focused on short-term utility (Russell, 1945/1972). Such criticism, according to Baum, "...overlooks the possibility that people might obey the golden rule out of self-interest" (p. 239). In emitting a valuable pattern of behavior such as obeying the golden rule there will be many instances where narrow self-interest dictates behavior inconsistent with the pattern. How, it may be asked, do people learn to ignore immediate in favor of long-term self-interest? According to Baum, reinforcement may act primarily on groups of acts

¹ The pragmatism advanced by Baum is in its negative aspects the same as that advanced by philosophical pragmatists ranging from Peirce (1878/1992), James (1907), and Dewey (1910), to Rorty (1979). Like these philosophers Baum rejects the identification of mental states with inner representations or events. Baum's pragmatism differs from philosophical pragmatism however by taking, as its criterion for the truth of a concept, usefulness in a science of behavior. For others "usefulness" meant usefulness in the clarification of concepts (Peirce), usefulness in the promotion of individual happiness (James), usefulness for the efficient ordering of experience (Dewey), or usefulness for everyday linguistic communication (Rorty). But none of these philosophical pragmatists combines molarism with behaviorism as Baum does.

constituting a functional behavioral pattern just as natural selection acts on groups of genes constituting a functional organism. This brings us to the second of Baum's two major themes—learning as a Darwinian, evolutionary process.

Baum discusses three such processes: 1) the evolution of species (biological evolution) across the lifetimes of individuals; 2) the evolution of behavioral patterns ("shaping") within the lifetime of an individual; 3) the evolution of cultural practices. Within each of these major evolutionary processes, three sub-processes are required: a) variation; b) reproduction (which Baum calls, "recurrence"); c) selection. In biological evolution, an individual's genetic structure is determined by that of his or her parents. Across a population of individuals, genetic structure varies according to the laws of genetic combination. Selection is the process by which the environment acts on individuals. The fittest individuals are preserved and reproduce (or "recur") while the unfit die off. The population as a whole thus evolves over time in the direction of greater fitness. But evolution would not work if fitness were constricted only to the momentary environment. Environments change. For a species to survive it must vary enough for some members to survive and reproduce if the environment should change within the bounds of reasonable possibility. Another way to put this is that a species would not survive if it lost contact with a changing environment. Although it is genes that determine a species' structure and innate behavioral patterns, it is individual organisms (groups of genes) that live and reproduce or die. You could thus divide the action of biological evolution into inner and outer. The inner part (not in direct contact with the environment) is molecular: DNA. The outer part is molar: the living organism. Only the latter is in direct contact with the environment. The existence and flourishing of molecular biology in no way precludes the existence and flourishing of evolutionary biology as an independent science.

Creationists have argued against biological evolution on the grounds that highly complex structures, such the eye, that require the coordinated action of many genes in their development, are too complex to have evolved by random mutation and natural selection. But biologists have been able to point to primitive,

less complex eyes in other animals and to trace a plausible story of how complex human eyes might have evolved from a simple light-sensitive patch on the skin, to a depression with a light-sensitive patch at the bottom, to a sphere with a pin-hole opening, to a transparent protective cover over the pin-hole, to a lens that would focus an image on the light-sensitive patch – all of these theoretical stages of eye evolution corresponding to structures on various species existing currently.

The evolution of behavioral patterns within the lifetime of an individual organism works in a parallel way to the evolution of species. The processes of variation and recurrence in individual behavior—the reflexes and fixed action patterns and the tendency to repeat reinforced actions (to develop "habits") which were the almost exclusive concerns of behaviorists before Skinner—are generally inner and molecular. But the selective action of the environment on these reflexes, fixed action patterns and habits, is outer and molar. Complex patterns evolve (are "shaped") from simpler ones (such as fixed action patterns) over the lifetimes of organisms in the same way that complex structures evolve over the lifetimes of species: survival of the fittest. Just as creationists question biological evolution on the grounds that complex structures such as the eye could not have arisen from simpler ones, so cognitivist creationists question behavioral evolution on the grounds that complex behavioral patterns could not have arisen from simpler ones without an active internal mind acting on internal representations of the world. But in behavioral evolution groups of responses may work together for the sake of a higher-valued and highly complex pattern just as in biological evolution groups of genes may work together to form a complex structure.

Obedience to the golden rule (to rules in general) is, according to Baum, understandable in terms of the molar behavior of whole organisms in contact with their environment. The environment (in the form of contingencies of reinforcement and punishment) acts only indirectly on internal physiological or cognitive events but directly on overt behavior. The belief that such direct interaction may be understood on its own terms is what Baum means when he says that a science of behavior is possible.

Just as the inner processes of behavioral evolution are the products of biological evolu-

tion so the inner processes of cultural evolution are the products of behavioral evolution. Variation and recurrence of behavioral rules (such as the golden rule) depend on contingencies of reinforcement and punishment over the lifetimes of individuals. Prevalence of such rules in a culture then determines the survival of the culture as a whole as it interacts directly with *its* environment (other cultures).

But are not such sciences as evolutionary biology, behavioral psychology, and cultural evolution only temporary and provisional—just placeholders until brain research eventually explains the entire human soul in all its manifestations? To Baum as to us such an expectation is ridiculous. He says (p. 39), “We expect that if a surgeon opens up your skull, inside will be a brain. The brain could be taken out, held in the hands, weighed, have its volume measured; we could play catch with it. Nothing of the sort could be said of your mind.” The expectation that the human mind and soul will someday be explained in terms of brain physiology is to us not very different from the expectation that the gross national product will eventually be explained in terms of atomic physics.

Understanding Behaviorism is an accessible as well as an important book. Like Skinner’s later books on human behavior, which it emulates, it contains no descriptions of experiments, no equations, and no graphs of data. Instead it is full of illustrations from everyday life and analyses of everyday speech and usage. Like Skinner’s books, it will appeal to anyone perplexed by the booming, buzzing confusion of modern life. One of us (MF) has used it with considerable success in undergraduate courses at Sarah Lawrence College. Although few of the students would say that the book made them behaviorists, they did all develop a greater sympathy and understanding of behaviorism, and its relevance to their lives, which is no small accomplishment.

As an example of how Baum applies behavioral principles to wider issues, consider his treatment of social interaction. Instead of sympathy, empathy, chemistry, etc., Baum follows Skinner in his analysis of mutual reinforcement and punishment contingencies. He says (p. 234), “Although relationships based on coercion are obviously inequitable, a subtler form of inequity marks exploitive relationships, in which both parties’ actions

are positively reinforced [by each other]. These are said to be inequitable because one party is cheated *in the long run*; the exploited party’s participation in the relationship is ultimately severely punished.” For example (p. 230–231), “...if a child works for all the years of childhood the results are considered disastrous....That the punishment is both delayed and incremental makes the relation particularly difficult for the exploited person to detect.” However, eventually, “The exploited child who has lost in health, education, or ability to enter into normal relationships may now reject the parents....Equity is the only stable policy.” Baum goes on to define equity in terms of reinforcement relative to investment, and to discuss various means of countercontrol by an exploited party. Imbalances of power between parties are analyzed, again, in terms of contingencies. Like Skinner, Baum is completely nonjudgmental in these matters; the difference is that Baum emphasizes context, long-term contingencies and molar patterns more than Skinner does. Students may frequently disagree with many of Baum’s observations and conclusions, but the discipline he imposes of framing objections as well as agreements in terms of overt behavioral patterns and reinforcement contingencies can excite students and breathe fresh air into class discussions of these topics.

Our only reservation is that Baum does not go far enough in the behavioral analysis of everyday language, including mentalistic language. Like Skinner, Baum feels that terms such as “free will,” “responsibility,” and “consciousness,” while useful in everyday life and amenable to behavioristic interpretation, can never be part of a science of behavior. But a developed science of behavior will eventually have to confront the pragmatic fact that life in the modern world would be almost impossible without the behavioral distinctions that those terms make. For example, as Baum points out (p. 56), “Jurors frequently have to judge whether a person decided to commit a crime consciously or not.” Still more do they have judge questions of free will and responsibility. It is not enough to say that we hold a person responsible when “...to punish his undesirable behavior or reinforce his desirable behavior would be useful” (p. 207). When dealing with free will and responsibility, questions arise about long- and short-term behavioral patterns and reinforcers, rejected alternatives, contingencies

of reward and punishment, as well as the social context of current and desired behavior.

We believe that it is possible to avoid mentalism without banishing mentalistic terms from a science of behavior. Skinner ceded such terms to less pragmatic, more mentalistic psychologies; this led people to believe that a behavioristic science could not deal with the aspects of their lives that most concerned them when the exact opposite was and is the case. As this book so elegantly shows, Baum's molar, functional view enables a deep understanding (in terms of behavioral prediction and control) of all aspects of life, including ones usually regarded as mentalistic.

REFERENCES

- Baum, W. (2005). *Understanding behaviorism: Behavior, culture, and evolution*. Second Edition. Malden, MA: Blackwell Publishing.
- Bennett, M. R., & Hacker, P. M. S. (2003). *Philosophical foundations of neuroscience*. Malden, MA: Blackwell Publishing.
- Dewey, J. (1910). *How we think*. Lexington, MA: D.C. Heath.
- James, W. (1907). *Pragmatism*. New York: Longmans, Green, & Co.
- Peirce, C. S. (1878/1992). How to make our ideas clear. In N. Houser, & C. Kloesel (Eds.), *The Essential Peirce*, Vol. 1 (pp. 124–141). Bloomington IN: Indiana University Press.
- Rorty, R. (1979). *Philosophy and the mirror of nature*. Princeton: Princeton University Press.
- Russell, B. (1945/1972). *History of western philosophy*. New York: Simon & Schuster.
- Skinner, B. F. (1948). *Walden two*. New York: Macmillan.
- Skinner, B. F. (1953). *Science and human behavior*. New York: Macmillan.
- Skinner, B. F. (1957). *Verbal behavior*. New York: Appleton-Century-Crofts.
- Skinner, B. F. (1971). *Beyond freedom and dignity*. New York: Knopf.
- Skinner, B. F. (1974). *About behaviorism*. New York: Knopf.
- Staddon, J. E. R. (2001). *The new behaviorism: Mind, mechanism, and society*. Philadelphia: Taylor & Francis.